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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

New and Rare Seed Distribution,

WASHINGTON, D. C.

BALTIC ALFALFA.

OBJECT OF THE DISTRIBUTION.—The distribution of new and rare seeds has for its object the dissemination of new and rare crops, improved strains of staple crops, and high-grade seed of crops new to sections where the data of the department indicate such crops to be of considerable promise. Each package contains a sufficient quantity for a preliminary trial, and where it is at all practicable the recipient is urged to use the seed for the production of stocks for future plantings. It is believed that if this practice is followed consistently it will result in a material improvement in the crops of the country. The recipient is requested to make a full report on the blank inclosed for the purpose regarding the results obtained with the seed.

DESCRIPTION.

There is no authentic record of the introduction of Baltic alfalfa into this country, although there is no doubt that the original stock came from Europe. The variety first attracted attention in 1906 in the vicinity of Baltic, S. Dak., where it had been grown for about 10 years. It was from this place that it received its name and not from the Baltic Sea region of Europe, as is commonly supposed.

Baltic alfalfa is similar to the Grimm variety, both in its botanical and agronomic characteristics, having originated as the result of the crossing of *Medicago sativa* (common alfalfa) and *Medicago falcata* (a yellow-flowered species). This hybridization doubtless took place in Europe and was more or less of a continuous process. After importation to this country, natural selection, brought about by the severe winters of South Dakota, eliminated the more tender individual plants and allowed the hardier ones to perpetuate the strain.

The variety does not differ materially in appearance from ordinary alfalfa, so that the casual observer has difficulty in distinguishing one from the other. While a large percentage of its flowers are the same color as those of common alfalfa, there are some that represent many shades of violet, yellow, and other hues. The taproots show a tendency to branch; the crowns are inclined to be low set and spreading. These characters of the crowns are undoubtedly of great importance in rendering the variety resistant to cold, as they afford protection to the buds which produce shoots for new growth.

Baltic alfalfa is apparently quite as hardy as the Grimm variety, and is recommended for the northern portions of the Great Plains region and parts of the Northwest where the winters are especially

severe and where little protection is given by snow. It will doubtless also prove valuable in the Northern States, including Wisconsin, Michigan, New York, and in the Northeastern States. In sections where winterkilling is not an important consideration it is thought to be not materially superior to common alfalfa, and in some cases is apparently not quite equal to that variety in point of yield. In the northern part of the United States it possesses the advantage of starting earlier in the spring than common alfalfa, and as a consequence there is usually more moisture in the soil upon which to draw for the production of the first crop. This ordinarily insures one good cutting, which is a very important consideration in the dry, short-season sections where subsequent cuttings can not be depended upon.

The seed of Baltic alfalfa produced in the Dakotas, Montana, Idaho, and Colorado appears to produce plants of equal hardiness. The supply of seed is as yet very limited and commands a high price. For this reason, unscrupulous dealers have offered for sale considerable quantities of common alfalfa under the name of Baltic, and on account of this practice it is highly desirable that each prospective purchaser take every possible means to learn whether the seed is true to name before purchasing.

PREPARATION FOR SEEDING.

Baltic alfalfa requires practically the same soil and culture as ordinary alfalfa, i. e., it requires a fertile soil and a well-prepared seed bed. Since spring seeding is usually practiced throughout the area discussed in this circular, it is advisable in most cases to plow the ground which is to be seeded to alfalfa during the preceding fall, leaving it rough in order to hold the snow and prevent blowing. One of the chief advantages of fall plowing is that it permits the ground to become thoroughly settled before the time of seeding. If alfalfa is to be seeded on land that has been in corn or potatoes, plowing in the fall is not necessary. Such ground can be put into excellent condition for seeding by thoroughly disking and harrowing in the spring. Ground that has been plowed in the fall should be given repeated diskings and harrowings in the spring until the subsurface has been well settled. This treatment also induces the germination of weed seeds and destroys many of the weed seedlings.

INOCULATION.

Unless the ground has recently grown alfalfa it is usually advisable to inoculate it with nitrogen-fixing bacteria. This can be done by scattering over the area to be seeded soil from a field upon which the crop has been previously grown successfully. From 300 to 500 pounds per acre are usually sufficient and should be harrowed in immediately upon application, to prevent injury to the germs by the

action of the sunlight. Another method which is also used is that of inoculating the seed with an artificial culture, which can be secured free of charge from the United States Department of Agriculture. Full directions for use accompany each bottle of the culture.

SEEDING.

There is generally no advantage to be gained by seeding alfalfa in the section here referred to before the middle of May, and in a majority of cases seeding early in June gives entirely satisfactory results.

Whether alfalfa seed should be sown with a nurse crop is a question upon which there is some difference of opinion. In general, however, a nurse crop is a detriment and does not furnish the help that it is intended to give. The chief advantage of a nurse crop is that it is a substitute for weeds, and on land that is very foul its use is sometimes advisable. Barley is probably the best crop to use for this purpose, and in all cases it should be seeded lightly and cut for hay rather than for grain.

The use of the press drill is advised in preference to the broadcast method of seeding, since by the use of the drill a uniform stand is more certain to be secured. However, if the drill is not available, a wheelbarrow seeder or one of similar type can be used quite satisfactorily. From 10 to 15 pounds of good seed are ample for sowing one acre, and on thoroughly prepared land no advantage is gained by using a greater quantity. The seed should be covered evenly but not deeper than $1\frac{1}{2}$ inches in light soil; in clay soil one-half of this depth is sufficient.

CULTIVATION OF OLD FIELDS.

There is not sufficient evidence regarding the value of cultivating broadcast fields to warrant definite recommendations. However, disking and harrowing should be tested thoroughly, leaving in each case a portion of the field untreated, to serve as a check on the cultivated area. The spike-tooth harrow appears to give good results for the first and, possibly, the second season. Severe treatment should not be given, as it injures the crowns of the plants and promotes the introduction of disease.

SEEDING IN ROWS.

In the region to which this circular applies alfalfa can be grown to advantage in cultivated rows, either for seed or hay production, especially under conditions of low rainfall. For seeding in this manner the preparation of the seed bed is practically the same as for broadcast seeding. The only difference is that the seed is sown in rows, preferably 36 to 42 inches apart, rather than in close drills. The press drill is probably the best implement for seeding in wide

rows, since by blocking up certain of the holes it can be made to seed in rows the desired distance apart.

Light rollers, 15 to 18 inches in diameter and approximately 20 inches long, can be used to follow in the row seeded by the drill, in order to slightly compact the soil and give the seed the necessary covering. These rollers can be made from lumber on the farm and attached to the drill in a frame. They are much more satisfactory than chains or the ordinary press wheels for covering the seed. From 1½ to 2 pounds of seed are sufficient when drilling in rows 36 or 42 inches apart, since if the stand is thick in the row, little advantage is obtained over the broadcast method of seeding. A thick stand can not be easily thinned; neither can an uneven stand be satisfactorily remedied. Hence the desirability of a uniformly thin stand in the beginning. On land that is inclined to be weedy a small quantity of millet seed should be mixed with the alfalfa seed, as the millet seed germinates quickly and marks the rows for the first cultivation. Frequent cultivations should be given the field after the plants are well started, in order to conserve moisture and to keep down the weeds. Until the alfalfa has made a heavy growth the weeder can be used to good advantage; after this an ordinary cultivator or a weed cultivator is a more satisfactory implement. Care should be taken not to ridge the plants any more than is absolutely necessary, flat cultivation being highly desirable. At least three cultivations are recommended in ordinary seasons.

The growing of alfalfa in rows does not materially interfere with the cutting of the crop for hay, and the farmer who has not tested this method will be surprised at the increase in yield over an ordinary broadcast field under conditions of low rainfall. For the production of seed this method is not only more certain to produce a crop, but it will invariably give a larger yield than a broadcast stand, since it affords better moisture conditions, more light to the individual plant, and doubtless other favorable conditions that are not well understood.

SUGGESTIONS.

If further information is desired, the following publications, which will be mailed by the Department of Agriculture free upon application, discuss in much detail the various subjects contained in this circular, and it is suggested that those who are interested apply for them at once: Farmers' Bulletins Nos. 339, Alfalfa; and 495, Alfalfa Seed Production.

Approved:

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Chief of Bureau.

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